CLAIMS

1. A low-profile antenna that provides dual simultaneous operation, comprising:

a first antenna having a circular polarization radiation pattern;

a monopole antenna including a hollow tube;

a ground plane; and

a support structure that positions said first antenna at a first distance from said ground plane and that positions said monopole antenna between said first antenna and said ground plane.

2. The antenna of Claim 1 wherein said monopole antenna is top-loaded and is formed by locating a disk on top of said hollow tube.

3. The antenna of Claim 1 wherein said first antenna is a spiral antenna with a plurality of arms formed in a material.

4. The antenna of Claim 3 wherein said spiral antenna is a four arm spiral antenna and adjacent arms of said four arm spiral antenna are excited with a phase shift of 180 degrees to transmit/receive circular polarized signals.

5. The antenna of Claim 4 wherein said four arm spiral antenna is fed by a cable with a first conductor and a second conductor, wherein said first conductor connects to a first pair of nonadjacent arms of said four arm spiral antenna and said second conductor connects to a second pair of nonadjacent arms of said four arm spiral antenna.

6. The antenna of Claim 5 wherein said cable passes through said hollow tube without making electrical contact with said hollow tube.

7. The antenna of Claim 4 wherein said four arm spiral antenna produces a radiation pattern that is maximum at forty-five degrees above the horizon and that is null toward the horizon.

8. The antenna of Claim 7 wherein said radiation pattern is symmetric about a center point of said first antenna.

9. The antenna of Claim 1 wherein said monopole antenna is fed by a cable with a first conductor and a second conductor, wherein said first conductor is connected to said hollow tube and said second conductor is connected to said ground plane.

10. The antenna of Claim 9 wherein said cable excites said monopole antenna with respect to said ground plane to transmit/receive vertical polarized signals.

11. The antenna of Claim 10 wherein said monopole antenna produces a radiation pattern that is maximum towards the horizon.

12. The antenna of Claim 1 wherein said first antenna and said monopole antenna operate simultaneously.

13. The antenna of Claim 1 wherein said first antenna is fed by a first coaxial cable having an inner conductor and an outer conductor and said monopole antenna is fed by a second coaxial cable having an inner conductor and an outer conductor.

14. The antenna of Claim 1 further comprising an enclosure located below said hollow tube that contains an additional circuit for the antenna.

15. The antenna of Claim 1 wherein said ground plane is a metal surface of a vehicle.

16. The antenna of Claim 2 wherein said disk reduces a length of said monopole antenna required for a desired frequency of said monopole antenna to be at a fundamental resonance level.

17. The antenna of Claim 16 wherein said disk increases a bandwidth of frequencies of said fundamental resonance level for said top-loaded monopole antenna.

18. The antenna of Claim 1 wherein said support structure is a housing including a dielectric material.

19. The antenna of Claim 18 wherein said dielectric material includes Lexan polycarbonate and reduces a required length of said monopole antenna.

20. The antenna of Claim 1 wherein said first antenna and said monopole antenna operate in a Direct Broadcast Satellite (DBS) radio system.

21. The antenna of Claim 3 wherein said material is a low loss dielectric.